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ABSTRACT

Projections of supply and demand for registered nurses (RNs) through the 1980's are presented with specific reference to the 14 southern states. The importance of manpower projections and studies for registered nurses is emphasized in light of figures that show the number of graduates from entry-level programs in the southern states has doubled since 1970. Enrollment trends for associate, baccalaureate, and graduate nursing programs are provided as well as ratios of employed nurses to 100,000 population for each southern state. It is suggested that the manpower outlook for registered nurses will be seriously affected by at least three important influences: (1) aspirations of registered nurses; (2) the shape of the health care delivery system; and (3) the pressure on the entire health industry to contain costs. National projections of nursing supply and requirement balances are discussed using statistics from three federally-funded research projects: (1) the Pugh-Roberts Study, (2) Doyle Projections; and (3) the WICHE Nursing Project. Based on the results of these projects, it is concluded that when states estimate requirements on the basis of need, the results point to a shortage and when based on extrapolation of current RN staffing patterns and utilization rates of health service, the results point to a surplus of RNs. Policy perspectives on the situation are discussed. It is recommended that shortages caused by uneven distribution be remedied and a set of competencies for various employment settings that relate to corresponding differences in baccalaureate versus degree training be developed. (BH)

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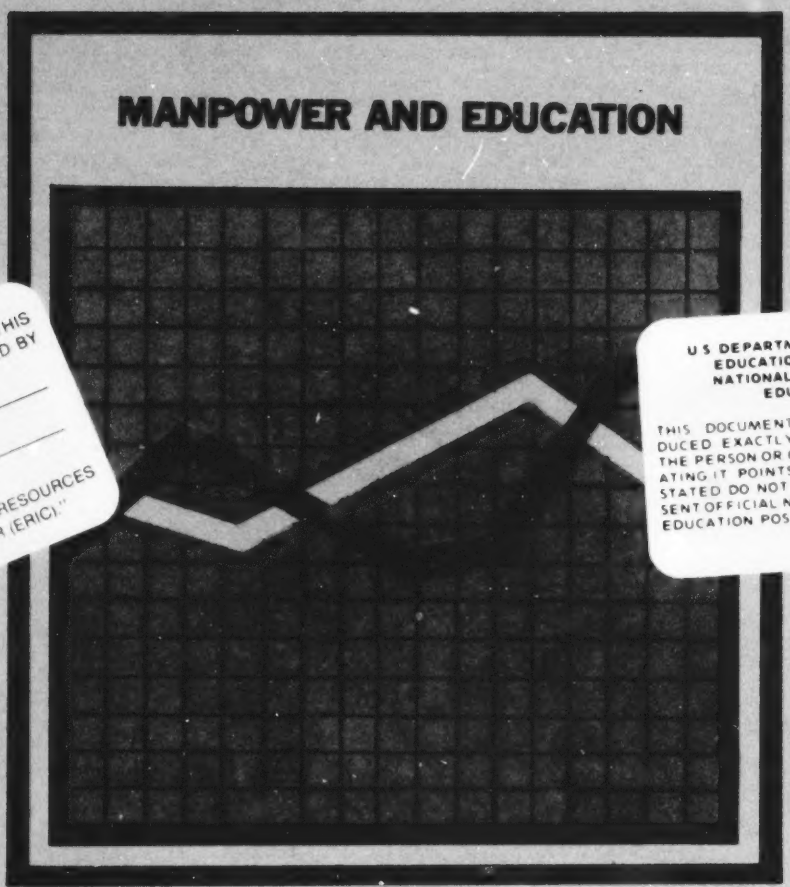

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Supply and Demand for Registered Nurses in the South, 1985

Southern Regional Education Board

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Highlights

- Since the beginning of the 1970s, the number of registered nurses annually graduating in the region has more than doubled.

- Among the factors which will affect the labor market for registered nurses are possible changes in the nation's health care delivery system, policies to contain health costs, and implementation of new roles and functions for RN's.

- National policy is now predicated on projections that the supply of RN's in the 1980's will be sufficient to meet requirements, even if national health insurance of moderate coverage is enacted.

- For the Southern region, when requirements are projected on the basis of "demand," the outlook is for a balanced situation for registered nurses in the mid-Eighties. According to projections based on certain assumptions of "need," however, the region will experience a nursing shortage.

- An overall balance of RN's for the region will not solve the distribution problem, especially not in rural areas. However, merely continuing to increase the number of RN graduates is not a cost-effective method of overcoming the distribution problem.

- Nursing education has undergone a great switch from predominance of hospital-based diploma programs to collegiate programs. In recent years the most dramatic increase has been in baccalaureate programs.

- At the present time, the baccalaureate level accounts for one-third of the annual graduations from RN programs in the region. Until objective differences in required competencies are developed for RN's who work in various settings that relate to corresponding differences in baccalaureate versus other training programs, there is no clear evidence to justify expansion beyond the current proportion of baccalaureate programs in the region.

Supply and Demand for Registered Nurses in the South, 1985

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1979

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Foreword

As higher education reacts to fill critical manpower gaps in various fields, there is a general tendency to overshoot the mark. Long after the postwar shortage of teachers was overcome, an increasing number of new teachers emerged from colleges and universities in an annual scramble for scarce jobs. The acute shortage of registered nurses has been with us for so long that some may find it difficult to conceive the possibility of a turnaround in this area and a restoration of balance between supply and demand for registered nurses in the near future. However, the effects of the current flow of 21,000 newly graduated registered nurses per year in the region do need to be anticipated, if we are to adjust to changing conditions.

To be sure, manpower projections often appear to be contradictory. The author of this report has, in effect, reconciled a number of national and regional projections on the outlook for registered nurses by focusing on the differing assumptions that distinguish the various projections. Some emphasize "need," some emphasize "demand," some are multidimensional.

SREB has a long history of working in behalf of goals for adequate health care throughout the region. The perspective of this study remains fixed on those goals but is equally mindful of the pragmatic constraints on our potential to attain these goals in an era which has begun to understand the meaning of concepts such as scarcity of resources, conservation of energy, cost containment, and educational accountability.

Winfred L. Godwin
President

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Introduction

Diametrically conflicting conclusions abound on the manpower outlook for registered nurses (RN's). While some hospital administrators are recruiting nurses from Canada and the Philippines to staff unfilled positions, United States government projections indicate that nursing shortages have been overcome. When President Carter vetoed the 1978 Nurse Training Act Amendments, he stated, "the outlook is good for adequate, sustained growth in the supply of nurses." Yet, according to the Executive Director of the American Nurses' Association, "We can't catch up with current needs, much less prepare for the future."[1]

The number of nursing graduates produced annually in the region has more than doubled since 1970, yet concern about unfilled budgeted RN positions continues to be voiced. Some Southern state studies conclude that the era of acute nursing shortages has ended, while other states continue to push for an expanded supply of RN's.

Not only is there sharp division about total future requirements for registered nurses, but also about the proportions of registered nurses who will be needed at various levels of educational preparation. Requests for new nursing programs, or for higher degree level programs, continue to be submitted to state higher education agencies. With the conflicting signals on projected supply-demand balances for RN's, and the ferment that nursing generates in higher educational planning, a review of the current situation and of future prospects is definitely warranted.

The Current Situation in the South

Past efforts to increase the output of nursing graduates within the region have been very productive. In 1969-70, the number of graduates from entry-level programs in the 14 Southern states was 8,825. By 1976-77, this had more than doubled to 20,938 (see Table 1). Concurrent with this vast expansion in the number of graduates came a shift in the proportion of nurses from college-based rather than hospital diploma programs. In 1970, 41 percent of all graduates came from diploma programs; by 1977, this proportion was reduced to 13 percent. Associate degree programs accounted for the largest increase, and baccalaureate program graduates tripled in number.

The shift away from hospital-based programs has been general throughout the nation. From the students' perspective, college-based programs provide coveted credentials. From the hospitals' viewpoint, the cost of educating nurses can be spread across a wider base through tax-financed collegiate programs than through hospital fees on patients. The explosion of the associate degree programs occurred simultaneously with the development of community colleges. In the most recent years, baccalaureate programs have shown the greatest acceleration.

In 1976-77, the proportion of graduating RN's at the baccalaureate level in the region was 32 percent. In the six-year period from 1972, 101,000 new registered nurses were produced in the Southern region, or almost three-fifths as many as the total employed in 1972.

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TABLE 1

Graduates — Registered Nursing, Basic Programs, SREB Region

1969-70 — 1976-77

	Baccalaureate*	Associate	Diploma	Total Region
1969-70				
Number	2,325	2,922	3,578	8,825
Percent of Regional Total	26	33	41	100
Percent of U.S. Total	26	25	16	20
1972-73				
Number	3,078	6,890	3,294	13,262
Percent of Regional Total	23	52	25	100
Percent of U.S. Total	24	28	15	23
1976-77				
Number	6,788	11,487	2,663	20,938
Percent of Regional Total	32	55	13	100
Percent of U.S. Total	29	32	15	27

Total Graduates, Basic RN Programs

	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	Total 6 Years
SREB Region	11,102	13,262	16,660	18,552	20,460	20,938	100,974
United States	51,304	58,881	67,061	73,915	77,065	77,755	405,981

*This does not include baccalaureate degrees earned by registered nurses who had previously earned associate degrees or diplomas.

Source: National League for Nursing, *Nursing Data Book*, New York, 1978, pp. 27-32.

This vast expansion in the education of registered nurses, augmented by net migration of registered nurses, has slightly narrowed the differences in the nurse-to-population ratios between the South and the nation. In 1972, the regional ratio of 279 employed registered nurses to 100,000 population was 28 percent below the national ratio. Just as the South had fewer doctors and dentists relative to population than the rest of the nation, so it had fewer registered nurses. Although no formal inventory of nursing manpower is available beyond 1972, other recent data indicate some improvement in these ratios. Estimates made by the Western Interstate Commission on Higher Education (WICHE) indicate an average ratio for the region of 347 to 100,000 population for 1976, and 446 to 100,000 population for 1980 (see Table 2). These estimated ratios are still 28 percent below the corresponding WICHE estimated national ratios for 1976, and 19 percent for 1980.

There is considerable variation among the ratios for the 14 Southern states. In 1972, Maryland had the highest ratio, while Arkansas had the lowest. According to the WICHE projections, West Virginia will have the highest ratio in the region in 1980, and Alabama the lowest.

TABLE 2

Ratios of Employed Registered Nurses to 100,000 Population

	1972	1976 Estimated	1980 Estimated
Alabama	219	289	380
Arkansas	189	276	400
Florida	355	393	440
Georgia	260	369	557
Kentucky	252	329	441
Louisiana	243	304	391
Maryland	359	446	560
Mississippi	225	308	438
North Carolina	313	383	484
South Carolina	295	363	476
Tennessee	228	300	414
Texas	241	322	434
Virginia	342	425	528
West Virginia	350	444	562
SREB Region	279	347	446
United States	389	480	547

Source: Estimates by WICHE Nursing Project, as quoted in U.S. Department of Health, Education, and Welfare, Division of Nursing, *First Report to the Congress*, February 1977, pp. 28 and 122.

Evaluation of health manpower adequacy cannot rest solely on population ratios. For example, some differences in registered nurse to population ratios are offset by substitution of other less skilled nursing personnel, and differences in utilization rates of health services have not always been directly associated with variations in the health status of the population.

Factors Affecting Manpower Projections for Registered Nurses

The manpower outlook for registered nurses will be seriously affected by at least three important influences: (1) aspirations of registered nurses, especially as espoused by leadership of the profession; (2) the shape of the health care delivery system in future years; and (3) the pressure on the entire health industry to contain costs.

Reformulation of Nurses' Roles

There has been a great deal of ferment in the nursing profession in recent years, as nurses have sought to define their roles and future direction. The mushrooming of the health care industry, especially of hospitals, has contributed to this soul-searching. During the 1960s, hospitals, which employ two-thirds of all registered nurses, turned to an army of auxiliary personnel to overcome severe nursing shortages. Additionally, in response to the development of more and more technology, new specialized occupations developed. To some extent the new occupations splintered patient-centered activities which might have been part of nurses' work, had they not been in such short supply. Today, on the floor of a typical community hospital, in addition to registered nurses, one finds licensed practical nurses, nurse's aides, unit clerks, respiratory therapists, EEG and EKG technicians, to name only a few. With the proliferation of patient-care personnel which somehow has to be coordinated, registered nurses have been thrust into managerial functions that differ tremendously from those patient-centered "caring" roles which probably attracted most of them into nursing. In the meantime, physician's assistants have appeared on the scene in doctors' offices, and registered nurses have sought to clarify how they differed from this new breed.

In response to these and other pressures, nursing leaders and educators in recent years have led an ongoing debate about appropriate roles for RN's and the profession's future directions. Although the final resolution of some of these directions is still indeterminate, the outcome will affect utilization patterns and, therefore, the supply and demand balances for registered nurses. The major thrust of these directions is briefly summarized below.

Patient-Centered Role. Nurses seek a return to a role of caring for patients on a direct one-to-one basis, rather than of directing traffic of auxiliary personnel. For some, the return to "caring" focuses on the physical aspects of patient care; for others, it centers on social or communicative relationships with patients, which had to be neglected under time pressures. The experiments in primary nursing arrangements in some hospitals, where RN's are assigned to the total care of certain patients rather than to various specialized functions on a nursing floor, are a response to nurses' desires to return to patient care.

Specialized Roles. At the same time that RN's seek a return to individual patient care, they also stress the need for some nurses to provide specialized care. As is the case in other

professions, RN's have branched into specialties in response to the explosion of knowledge. For example, some train to become intensive care unit nurses, anesthetist nurses, pediatric nurses, midwives, or urological nurses. Training for such specialized roles is usually at an advanced level subsequent to the basic training required for all registered nurses. The term "clinical nurse specialist" is often used to describe these roles.

Expanded Roles. Nurse practitioners are the clearest example of the quest for an expanded nursing role. An "independent role" is often associated with nurse practitioners, who are sometimes the only providers of primary health care to patients in rural areas. WICHE estimates that, as of 1977, 8,000 registered nurses had completed nurse practitioner training in the United States.[2]

Differentiating Roles. The registered nurse leadership seeks a distinction between RN's who are trained at various levels, with "professional" recognition limited to those who have earned a baccalaureate degree. Toward this objective, the American Nurses' Association (ANA) has resolved that, by 1985, the baccalaureate degree should be the entrance requirement for "professional" nursing, and the associate degree to "technical" nursing. Additionally, by 1980, the ANA resolution calls for a consensus on the differentiation of the two levels of competencies for "technical" and "professional" nursing. Along these same directions the SREB Nursing Curriculum Project differentiated various roles and levels of nursing with corresponding educational preparation, from the associate degree to the doctoral levels.[3]

Health Care Delivery System Changes

The shape of the health care delivery system of the future will also affect demand for and utilization of registered nurses. Two major possibilities of change which have received national attention are some form of national health insurance, and greater reliance on health maintenance organizations. A health care delivery system that increases access to medical care, such as national health insurance would probably produce, is expected to increase the demand for all types of health industry manpower. Just as enactment of Medicare spurred greater utilization of physicians, hospitals, and all associated personnel, so would enactment of any further legislation that reduces the personal out-of-pocket cost of access be expected to increase the need for all health manpower, including RN's. The Doyle study,[4] commissioned by the Department of Health, Education, and Welfare (HEW) Division of Nursing, projects that the requirement for RN's in 1985 would be five to 17 percent greater with various levels of national health insurance than if the health care system remained as presently constituted. These increased RN requirements reflect higher outpatient hospital and physicians' office utilization rates. (An increase in hospital utilization rates is expected if there is complete coverage under national health insurance.)

A change in our national health system to greater reliance on coverage of individuals under health maintenance organization (HMO) plans assumes that there would be more preventive care, and more emphasis on health versus sick care, relative to the present system. The Doyle study estimates that under this alternative the projected requirements for RN's in 1985 would be one percent lower than under a continuation of the present system.[5] Since HMO's imply greater reliance on outpatient than hospital care, and since employment of RN's is concentrated in hospitals, the HMO alternative tends to depress future requirements for RN's.

The study also considers the likely effects on requirements if new and expanded roles and functions for nurses are implemented. Three specific possibilities are included under such

"role reformulation": (1) greater stress on primary nursing arrangements in hospitals (which tend to increase the number of registered nurses employed by hospitals), (2) the addition of clinical nurse specialists "which expand the scope of nursing practice in inpatient care,"[6] and (3) the greater acceptance of nurse practitioners by physicians who seek to serve excess demand for their services. The requirement for RN's resulting from role reformulation is projected as being from one to 19 percent greater than under continuation of the present delivery system. The large range in the one to 19 percent outcome occurs because of differences in the assumptions on the extent to which the three types of role expansions might occur.[7]

Cost Containment

The third factor that will affect the requirement for RN's is the move for cost containment. The proportion of the United States gross national product consumed by the health industry has escalated sharply in recent decades, from 4.6 percent in 1955 to 8.3 percent in 1975.[8] Approximately 42 percent of health industry expenditures is now publicly financed.[9] The current hue and cry to control public expenditures has focused especially on the health industry, resulting in a multitude of programs to "contain costs." Certificate of need legislation, professional standards review organizations, and national policy initiatives to clamp a lid on permitted hospital cost increases are examples of cost containment in the health industry. Indeed, enactment of any type of national health insurance is generally predicated upon first solving the cost escalation problem.

Cost containment will have contradictory effects upon projected requirements for RN's. For example, hospitals under pressure to reduce costs will be more reluctant to experiment with role reformulation unless they can be assured that changes will not increase nursing care personnel costs. Primary care nursing in hospitals results in an increased requirement for RN personnel at the expense of less skilled nursing personnel. Whether increased efficiency will offset the costs of a greater proportion of more highly skilled personnel remains to be seen. Some studies indicate positive outcomes.[10] The employment of clinical nurse specialists, if they are added to perform services previously unavailable to patients, will no doubt improve care, but could also raise costs.

On the other hand, if greater utilization of nurse practitioners and clinical nurse specialists increases the productivity of the health care system, role reformulation for RN's would be congruent with cost containment directions of national policy. Similarly, if greater reliance of RN's as *health* educators results in a reduction of *sick* care, then this type of role reformulation would also coincide with cost containment objectives.

The realization of expanded roles for RN's, however, depends to some extent upon the assumption of excess demand for physicians' services. This assumption was more realistic in the 1960s when the concept of new roles for RN's was gaining momentum than it is today when nurse practitioners and clinical nurse specialists are emerging in increasing numbers and ready for employment. For example, the concept of accommodating more patients in a pediatric practice by using pediatric nurse specialists who examine "well babies" was more critical during a time of severe physician shortages than it will be in the future, when the Secretary of HEW predicts an oversupply of physicians.

National Projections of Nursing Supply and Requirement Balances

It is small wonder that, with countervailing currents which affect the supply and demand outlook for RN's, the conclusions on whether training programs are catching up with demand are sharply divergent. President Carter's 1978 veto of continuing major federal support of nurse training programs was premised on the view that general RN shortages had been overcome. The leadership of the nursing profession, through the WICHE Nursing Project Panel of Experts, on the other hand, has produced projections of nursing requirements in 1982 that cannot possibly be met by the expected number of nurses to be trained.[11]

A summary of the various national nursing requirement projections that are now available is presented in Table 3 and Figure 1 together with the latest HEW supply projections. Three federally funded research groups developed requirement projections according to different methods and assumptions. The Pugh-Roberts study, prepared in conjunction with and early in the WICHE Nursing Project,[12] incorporates assumptions on a number of changes in utilization rates of RN's in its baseline projection. The Doyle projections[13] begin with current utilization rates and nurse staffing patterns for their baseline projection, and then add assumptions regarding moderate-to-full implementation of National Health Insurance (NHI), moderate-to-high growth of health maintenance organizations (HMO's), and moderate-to-high development of nurse role reformulation possibilities. In the Doyle projections, the nurse role reformulation model incorporates changes in RN staffing patterns, while the HMO and NHI models reflect changes in patient utilization of the health delivery system, with corresponding changes in RN requirements. HMO's increase physician's office visits and produce lower nurse requirements, while the NHI model moves towards greater hospital utilization and, therefore, greater RN requirements.

The WICHE Panel of Experts model is based on projections of patient utilization rates as well as changes in nurse staffing patterns. For example, the staffing pattern criterion of RN's for nursing care homes in 1982 in the WICHE Panel of Experts model ranges from 9 to 20 RN's per 100 residents, for the lower and upper bounds of their projections.[14] In 1974, the ratio for *skilled* nursing homes in the United States was 5.2 RN's per 100 residents.[15] It is differences over assumptions on nurse staffing patterns such as this one that yield a WICHE 1982 requirement upper bound projection that is 40 percent higher than the highest of the Doyle model requirement projections shown for 1985. (Doyle does develop some additional projections, one of which combines the maximum assumptions of *both* the NHI and role reformulation models. The upper bound WICHE projection for 1982 is still 15 percent higher than this maximum requirement possibility developed by Doyle for 1985.)

The *lower* limit of the supply range of RN's in 1985 exceeds all requirement projections except the *upper* bound of the Doyle role reformulation and NHI models, and both the lower and upper bound WICHE projections for 1982. Also, the 1990 projected supply range of RN's

TABLE 3

Projections of Registered Nurse Requirements and Supply for the United States (Headcount)

	1972	1976	1977	1980	1982	1985	1990
Number Employed	795,260						
Pugh-Roberts Baseline Projection	868,630			1,155,000			1,570,690
WICHE Panel of Experts					1,402,200–1,928,500*		
Doyle							
Baseline Model	798,100	899,100		1,010,300		1,162,800	
National Health Insurance Model		899,100		1,063,600–1,193,900		1,223,100–1,363,800	
Health Maintenance Organization Model		897,600–898,400		1,003,300–1,006,300		1,144,800–1,153,800	
Role Reformulation Model		901,700–931,400		1,016,100–1,100,700		1,174,000–1,380,700	
Projected Supply, HEW Division of Nursing			1,011,000	1,152,000	1,238,000–1,245,000	1,345,000–1,380,000	1,484,000–1,587,000

*FTE Requirements are 1,219,300 to 1,677,000, which were converted to headcount requirements with a 1.15 headcount-to-FTE ratio.

Sources: Timothy Doyle (Vector Research, Inc.), *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985*, U.S. Department of Health, Education, and Welfare, Division of Nursing, Hyattsville, Maryland, 1978.

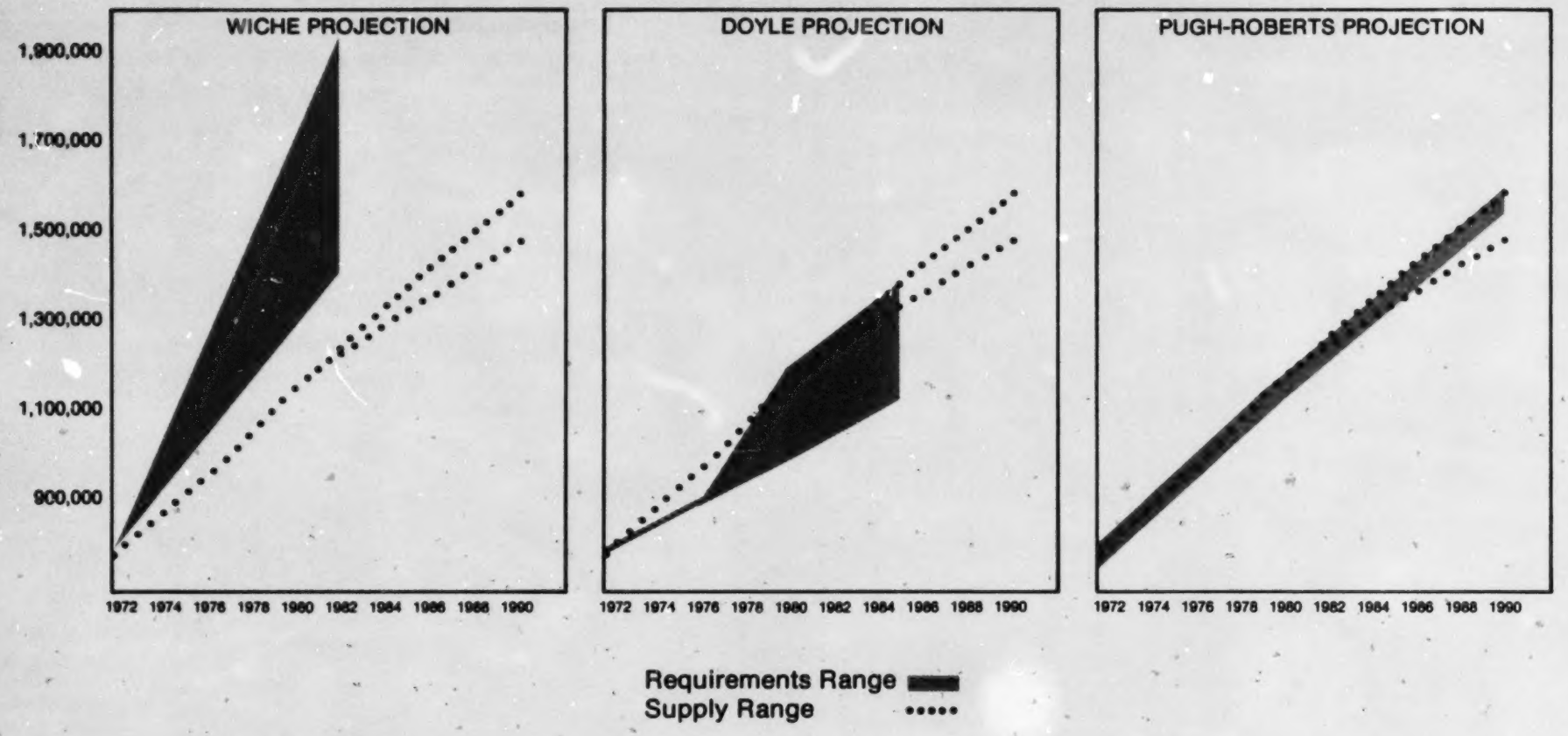
Tom Bergan (Pugh-Roberts Associates, Inc.), *A National Model of Supply, Demand and Distribution, Final Report*, Western Interstate Commission for Higher Education, Boulder, Colorado, 1976.

Western Interstate Commission for Higher Education, Panel of Expert Consultants, *Analysis and Planning for Improved Distribution of Nursing Personnel and Services, Final Report*, Boulder, Colorado, June 1978.

U.S. Department of Health, Education, and Welfare, Division of Nursing, *Second Report to the Congress, Nurse Training Act of 1975*, Hyattsville, Maryland, 1979.

FIGURE 1

REGISTERED NURSE REQUIREMENTS AND SUPPLY PROJECTIONS
UNITED STATES
(Headcounts)



For 1972, supply and requirement levels shown represent actual employment in that year.

is lower than the projection by Pugh-Roberts, which is the only requirement projection that extends to 1990.

Early in 1978, the Congressional Budget Office examined the various national projections (although the WICHE Panel of Experts data were not available then) and concluded: "In general, the supply of RN's available for employment through 1990 is likely to be sufficient to meet the demands of major potential health system changes, both combined and individually."[16] The Congressional report, however, noted the uneven geographic distribution of nurses, with emphasis on the deficits in the Southern states. Strategies suggested to improve geographic inequalities included the targeting of federal funds to nursing schools in or near shortage areas, further expansion of nurse-practitioner programs, restriction of loan forgiveness options to service in shortage areas, and expansion of the small number of National Health Service Corps scholarships currently available to nurses. Also mentioned were options to improve working conditions in underserved areas so as to attract more nurses. A great deal of research has been conducted to determine the variables that have the greatest bearing on location choices by physicians. Much less is known, however, about what affects nurse distribution patterns.

The Congressional Budget Report ends by noting "two considerations" that suggest a sufficiency of nurses on a national basis, despite health system changes that indicate potential shortages. "First, successful efforts to limit the rate of hospital growth and unnecessary utilization . . . and a supply of roughly 300,000 to 600,000 inactive RN's who, by maintaining a license, indicate some interest in becoming active in nursing."[17] The supply of inactive RN's has always been an indeterminate factor that has complicated the assessment of RN manpower balances. In addition to currently licensed RN's who are inactive, there are large numbers of RN's who fail to renew licenses. In North Carolina in 1975, for example, it was estimated that there were half again as many such nurses as were active and practicing.[18] The extent to which such a pool might become active depends partly on salaries and the opportunity for continuing education to update RN's who have been out of practice.

The Outlook Within the Southern Region

Just as there are conflicting projections of nursing requirements for the nation, so there is a great deal of variation in projections of nursing requirements within the region. Several Southern states have developed state projections on nursing requirements. Some of these based their work on the WICHE state model methodology (which is similar to the Panel of Experts' model), while others used independent methods. The results of recent state studies are summarized in Table 4.

Generally when states estimate requirements on the basis of "need," the results point toward a shortage. Reports based on extrapolations of current RN staffing patterns and utilization rates of health services tend to show RN surpluses.

Registered Nurse Requirement Projections

In 1972, according to the American Nurses' Association Inventory of Nurses,[19] there were 238,322 RN's resident in the region, of whom 173,039 were employed in nursing. This is the latest year for which an accurate count of RN's is currently available.

Results of three projections on RN requirements are presented in this report.

The WICHE projections for each of the 14 Southern states are for 1982, and were developed by the WICHE Nursing Project Panel of Experts.[20] The requirements are based on projected utilization rates of health services, and on the Panel of Experts' criteria of RN staffing patterns to serve these utilization rates. The 1975 hospital utilization rates are maintained for the 1982 projections. However, the 1973 age-specific utilization rates for nursing homes and hospital outpatient facilities are increased for the 1982 projections. The 1982 utilization of public health nursing services was developed according to the Panel of Experts' criteria. The "upper and lower bound" WICHE projections result from the application by the Panel of their criteria on minimum and optimum staffing patterns.

The WICHE full-time-equivalent 1982 RN requirements for the 14 Southern states range from 340,300 to 469,900, depending on the upper and lower bound nursing pattern criteria (see Appendix 3). Since many nurses work part-time, the total number of employed nurses exceeds the corresponding number of full-time RN's. Conversion of the WICHE 1982 FTE projection to headcount nurses results in a requirement of 391,300 to 540,400 RN's for the upper and lower bound staffing patterns (see Table 5).

The second regional projection was constructed specifically for this report and follows closely the methodology developed by the Virginia Council of Higher Education for its nursing study.[21] The major distinguishing feature between this SREB projection and the WICHE model centers on nurse staffing patterns. In the WICHE model the patterns reflect the upper and lower bound criteria established by the Panel of Experts. In the SREB

TABLE 4

Summary — Recent State Studies on Nursing

State	Report	Date	Projection Methods	Major Findings
Alabama	Alabama Commission on Higher Education, *Interim State Report, Projected Supply and Demand for Registered Nurses in Alabama in 1981*	December, 1977	Extends 1976 RN state staffing patterns; projects on the basis of "effective demand."	There will be a surplus of RN's. The Commission is cooperating with nurses' organizations in the state in redoing the study according to the WICHE state model methodology.
Georgia	Statewide Master Planning Committee for Nursing and Nursing Education, *Nursing in Georgia 1975*	July, 1975	The report predates development of recent methodology of state nursing manpower analysis.	No projected supply and demand comparisons are included. The report is "need" oriented, and states, "provision of the recommended number of nurses to provide quality primary health care services would require creation of an additional 4,000 nursing positions."
Louisiana	Louisiana Board of Regents, *Health Manpower Planning Project*	September, 1978	Supply and demand projections are on the basis of extending past trends of the number of graduates and employment of RN's in the state.	Indicates a 7 percent shortage relative to demand in 1980, growing to 14 percent in 1985. New Orleans will continue to experience the greatest shortage, partially because there are many more hospital beds in the city and relatively fewer nursing programs than in other parishes. The report holds out little hope of alleviating shortages via recruitment of inactive nurses. Hospital administrators view increased local production of graduates, rather than mobility, as the best strategy to overcome rural shortages. Certification-of-need lids on hospital construction, and increased productivity of nursing education programs may help balance supply and demand.
Maryland	Maryland Nurses' Association, Inc. *Report of the Maryland Commission for Nursing*	1977	No supply and demand projections are included in the report.	Addresses issues on nurse utilization and preparation. Recommends increasing opportunities for baccalaureate nursing education.
Mississippi	Mississippi Council of Deans and Directors, Schools of Nursing, *An Assessment of Nursing Needs and Resources in Mississippi*	March, 1978	Follows WICHE state model to project requirements; projects on the basis of "need."	Shortage in 1981 of 23 to 31 percent, relative to the lower and upper bound requirement criteria.
North Carolina	University of North Carolina General Administration, *Nursing Education in North Carolina, 1975-1980*	November, 1975	Relies on Employment Security Commission and Research Triangle Institute projections for requirements in 1980.	Programs in place at the time of the report should meet effective demand for RN's in 1980. "Need" or "goals" are contrasted with effective demand, but they are not quantified.

State	Report	Date	Projection Methods	Major Findings
South Carolina	Statewide Master Planning Committee on Nursing Education, *Master Plan for Nursing Education in South Carolina* (recommendations to State Board of Nursing and South Carolina Commission on Higher Education)	June, 1978	No requirement projections were developed. Supply projections are based on the present educational programs in the state.	Ratio of RN's per 100,000 population will increase from 328 to 541 in the 1977-1990 period.
Tennessee	Tennessee Higher Education Commission, *Nursing Education in Tennessee*	August, 1977	Compares current RN to population ratios to past ratios and to previously established goals.	The 1969 goal of 300 RN's per 100,000 population was exceeded in 1974 with a 403 ratio. (The comparable national ratio in 1974 was 407.) Ratios in urban areas are three times as high as those in rural areas. New nursing programs have not alleviated the distribution problem. Some disparity in ratios is appropriate, and the nursing profession should consider incentives to attract RN's to rural areas.
Texas	Coordinating Board, Texas College and University System, *Toward Quality Health Care*, CB Study Paper 24	January, 1975	Projects requirements on the basis of current utilization and according to optimum staffing patterns established by the state's Nursing Project.	Report gives surplus or deficit for 1980 for each of the state's 21 planning regions. When the regional surpluses and deficits are added statewide, a net surplus of 11,800 results under the current staffing patterns and a net deficit of 6,500 under the optimum staffing patterns.
Virginia	State Council on Higher Education for Virginia, *Health Manpower Study: Registered Nurses*	December, 1976	Extends 1975 RN state staffing patterns, projects on the basis of "effective demand" supply projection based on migration, graduates, license examination pass rates, and age-specific work force participation rates.	Surplus of 50 percent RN's relative to requirements in 1995.

TABLE 5

Regional Registered Nurse Requirements (Headcount)**

	SREB Projections				WICHE Projection	
	1985		1990		1982	
	Regional Staffing Patterns	U.S. Staffing Patterns	Regional Staffing Patterns	U.S. Staffing Patterns	Lower Bound	Upper Bound
Community Hospitals						
Administration	9,325	11,005	10,095	11,916		
Inpatient Supervisors	27,048	31,718	29,287	34,340		
Operating Room Supervisors	3,500	4,128	3,791	4,470		
Outpatient Supervisors	2,151	2,477	2,327	2,685		
Inpatient Staff	89,506	103,775	96,933	112,358		
Operating Room Staff	8,390	9,780	9,083	10,589		
Outpatient Staff	6,001	6,869	6,495	7,437		
Other	13,127	15,201	14,211	16,461		
Other Hospitals						
Hospital Units, Other Institutions	400	400	400	400		
Federal Hospitals	14,634	14,634	14,634	14,634		
Tuberculosis, Psychiatric and Long-Term Hospitals	6,594	8,807	7,031	9,389		
Nursing Homes	20,934	26,880	23,210	29,804		
Public Health, Including Schools						
Staff	19,255	21,263	20,528	22,669		
Administrators	3,851	3,827	4,106	4,080		
Schools of Nursing	7,800	7,800	7,800	7,800		
Other Settings	44,289	51,155	47,606	55,044		
Total	276,805	319,719	297,537	344,076	391,337*	540,416*

*Converted from FTE according to ratios in Doyle, p. 44, and *Source Book Nursing Personnel*, Table 82, for Hospital Nurses, with resulting average conversion ratio of 1.15 headcount to FTE RN's.
**For full-time-equivalent projections see Appendix 3.

projection the upper and lower staffing patterns, for the most part, are the *actual* national and regional staffing patterns in 1977, reflecting current patient care levels. Since national RN staffing patterns still exceed the regional ones, the assumption that by 1985 the region's RN staffing pattern will equal the *current national* pattern produces a higher requirement than that of maintaining the 1977 *regional* RN staffing patterns. Further detail on the methods used in the SREB projection are found in Appendix 1.

The 1982 WICHE lower bound requirement projection is 41 percent above the 1985 SREB projection that is based on a continuation of current regional staffing patterns and 22 percent above the SREB projection that is based on the higher national staffing patterns (see Table 5 and Figure 2). The 1982 WICHE upper bound requirement projection is 69 percent higher

than the 1985 SREB projection that is based on the region reaching the 1977 national staffing patterns by 1985.

The Doyle state requirements for 1985, shown in Table 6, comprise the third projection available for the region. These state requirements were developed by the same group whose national projections were discussed on page , and include varying assumptions about health care system changes. The baseline projection assumes a continuation of the present health care system, while the "liberal NHI" projection assumes enactment of national health insurance with broad coverage; the "high role reformulation" projection is based on extensive implementation of extended roles for RN's.

The baseline Doyle projection for 1985 in the region is for 250,300 *full-time-equivalent* RN's, which compares rather closely to the corresponding 244,300 SREB projection based on a continuation of regional staffing patterns. The Doyle projections of 284,500 and 291,300 RN's in 1985 under assumptions of high role reformulation and liberal NHI, respectively, are somewhat higher than the SREB projection of 281,600 RN's in 1985 under the assumption that the region's staffing patterns by then would reach the nation's current pattern with no other changes in the health system.

TABLE 6

State Registered Nurse Requirements, 1985
(Full-Time-Equivalent)

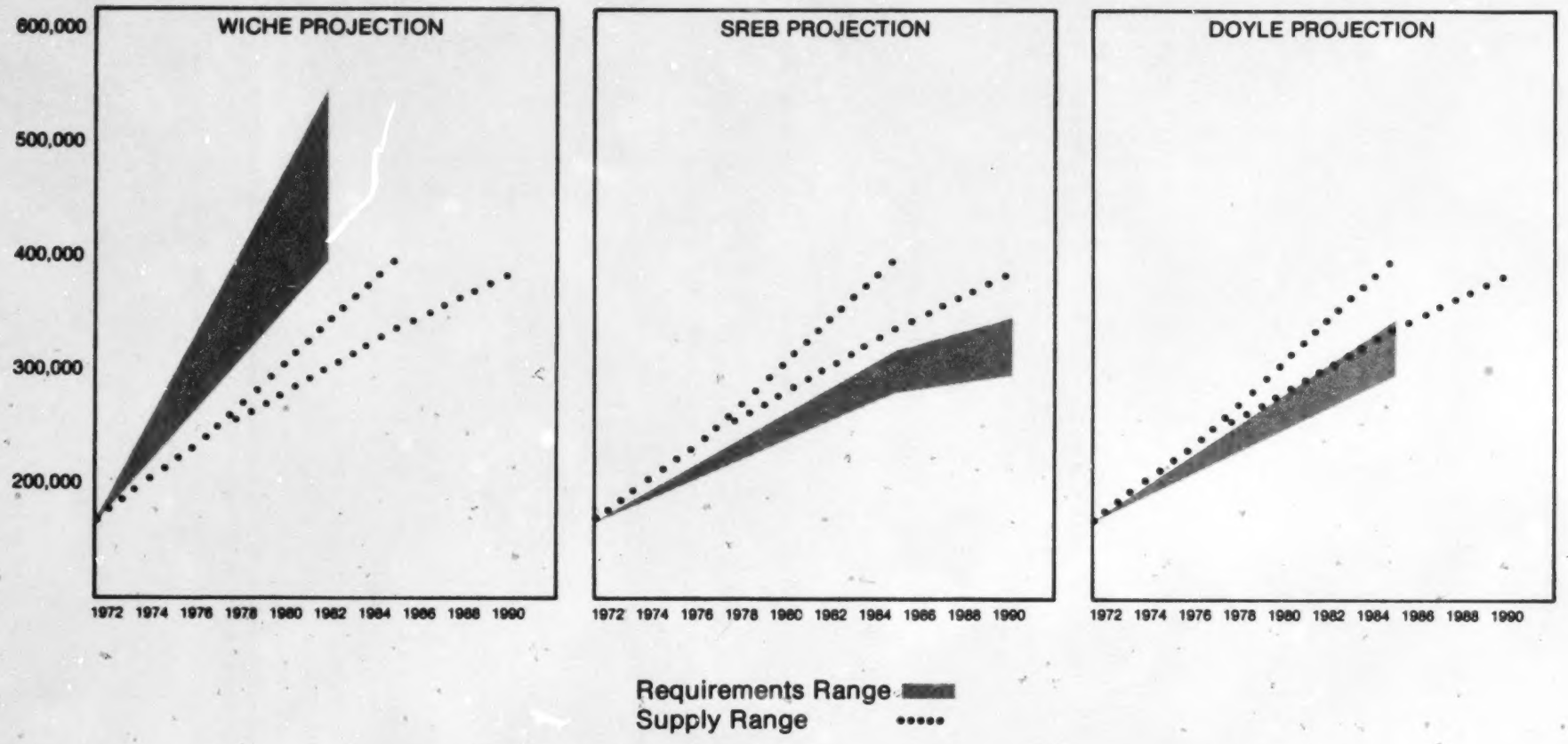
	Doyle Projections			SREB Projections	
	Baseline	High Role Reformulation	Liberal NHI	Regional Staffing Patterns	U.S. Staffing Patterns
Alabama	11,745	14,196	13,303		
Arkansas	5,972	7,787	6,968		
Florida	43,184	47,302	49,643		
Georgia	18,828	21,721	21,411		
Kentucky	10,463	12,131	12,058		
Louisiana	12,528	15,027	14,956		
Maryland	21,534	21,002	24,843		
Mississippi	7,247	9,013	8,490		
North Carolina	22,086	24,316	26,564		
South Carolina	10,365	11,579	12,388		
Tennessee	14,365	17,646	16,135		
Texas	43,178	51,514	50,735		
Virginia	21,645	23,151	25,966		
West Virginia	7,136	8,142	7,828		
SREB Region	250,276	284,527	291,288	244,294	281,596
Headcount Conversions	290,070*	329,767*	337,603*	276,805	319,719

*Converted to headcount according to ratios for national headcount to full-time-equivalent results in Doyle, *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985.*

Source: U.S. Department of Health, Education, and Welfare, Bureau of Health Manpower, *Second Report to the Congress*, U.S. Government Printing Office, Washington, D.C., March 1979, p. II-41.

FIGURE 2

REGISTERED NURSE REQUIREMENTS AND SUPPLY PROJECTIONS SOUTHERN REGION (Headcounts)



For 1972, supply and requirement levels shown represent actual employment in that year.

Both the lower and upper bound WICHE 1982 projections considerably exceed even the liberal NHI Doyle projection for 1985.

Unfortunately, the data on current employment of registered nurses in the region, against which the 1985 and 1990 requirement projections might be compared, are spotty. While some state boards of nursing are able to produce current data on the number of nurses employed, others can only supply data on the number of nurses holding active licenses, regardless of their employment status. The projected SREB regional RN requirement for *hospitals* in 1985 represents a 10 and 27 percent increase over 1977 full-time-equivalent employment for the regional and national staffing patterns, respectively. Relative to 1972, the latest year for which comprehensive employment data of nurses in all settings were compiled, the SREB 1985 requirement projections represent a 60 and 85 percent increase for the regional and national staffing patterns, respectively.

Registered Nurse Supply Projections

There are numerous problems inherent in projecting the supply of RN's, not the least of which is defining what is meant by "supply." As used by nurses, "supply" excludes RN's who fail to, or who do not wish to, practice despite maintaining a current license. Although no comprehensive information exists, there are indications that the number of these non-practicing nurses is very large. For example, in North Carolina in 1975, it was estimated that, in addition to the then 26,000 license holders, there were 10,000 "delinquents," or nurses who failed to renew their licenses within the state of North Carolina.[22] Moreover, not all currently *licensed* RN's are practicing nursing. Many renew their licenses without entering the labor market. In 1972, employed RN's constituted 73 percent of the total residing in the region. A national survey in 1974 revealed that 70 percent were employed in nursing.[23]

In addition to questions on the conceptual definition of "supply," there is the problem of obtaining up-to-date counts of RN's regardless of the definition used. The last national inventory of nurses was for 1972, and the 1977-78 inventory has not been completed. Individual state board of examiners' reports on licensed RN's are not strictly comparable, do not all include information on the proportion of license holders who are practicing, involve some double counting where RN's hold licenses in more than one state, and account for nurses licensed in one state, but practicing in another.

To estimate supply, the HEW Division of Nursing in past years used a model which applies a net attrition factor to the number of RN's employed in nursing to account for those who die or leave the profession and those who re-enter the labor market, and then adds the annual number of nursing graduates.[24] The accuracy of this model depends on how closely the attrition factor mirrors RN entry into and exits from the labor market, on the actual number of nursing graduates, and on the proportion of those who will pass state licensing exams.

This Division of Nursing model was applied regionally. It begins with the number of RN's employed in nursing in the region in 1972, uses the same net attrition rates as the national projections, and assumes that the 1976-77 level of 21,000 basic nursing program graduates in the region will remain constant. The above assumptions yield a projection of 335,000 RN's available for employment in nursing in 1985 (see Table 7). To the extent that labor force participation rates might increase, the projection would have to be raised. One of the factors that could affect the labor force participation rate is salaries.

TABLE 7

Projected Supply of Registered Nurses Available for Employment, SREB Region, per HEW Model

	Registered Nurses	Net Attrition Rate***	Attrition	Graduates
1972	173,039*	2.1	3,634	11,102
1973	180,507	2.1	3,791	13,262
1974	189,978	2.2	4,180	16,600
1975	202,398	2.3	4,655	18,552
1976	216,295	2.4	5,191	20,460
1977	231,564	2.5	5,789	20,938
1978**	246,713	2.6	6,415	21,000
1979	261,298	2.7	7,055	21,000
1980	275,243	2.8	7,707	21,000
1981	288,536	2.9	8,368	21,000
1982	301,168	3.0	9,035	21,000
1983	313,133	3.1	9,707	21,000
1984	324,426	3.2	10,382	21,000
1985	335,044	3.3	11,056	21,000
1986	344,988	3.4	11,730	21,000
1987	354,258	3.5	12,399	21,000
1988	362,859	3.5	12,700	21,000
1989	371,159	3.5	12,991	21,000
1990	379,168			

*Number employed in Nursing, 1972.

**On the basis of the 73 percent participation rate in 1972, 246,713 RN's available for employment would indicate 337,963 resident RN's. Reports to SREB from State Boards of Nursing Examiners of licensed RN's in 1978 indicate a total of 380,541 licensees, who are not strictly comparable to "resident" RN's.

***See Department of Health, Education, and Welfare, Division of Nursing, *Source Book Nursing Personnel*, 1976, p. 221, and *First Report to the Congress, February 1, 1977*, p. 14.

During the past year, the HEW Division of Nursing has refined its supply projection model and developed state projections of "active RN's." This refers to nurses who are available for employment, a concept that is comparable to the 73 percent proportion which employed RN's in the region in 1972 represented of those residing in the 14 Southern states.

The Division of Nursing state projections for 1977 and 1985 are shown in Table 8 and indicate a 130 and 62 percent increase in active RN's in 1985 over the number employed in the region in 1972 and 1977, respectively. The Division of Nursing 1985 state projections total 395,600 for the region, exceeding the 335,000 projection that was obtained by applying the earlier Division of Nursing model.

Comparison of Requirement and Supply Projections

The projected supply of RN's available for employment in 1985 in the region — 335,000 to 395,600, depending on the model that is used — exceeds both the minimum and maximum of the requirement projection range of 276,800 to 319,700 according to the SREB model (see Figure 2). The supply also exceeds each of the Doyle requirement projections. Even the liberal NHI Doyle requirement of 337,000 is only slightly above the *minimum* supply projection. The

supply, however, will not be sufficient to meet the WICHE requirement projections of 391,300 to 540,400 for 1982.

This difference in the RN manpower outlook results basically because the SREB and Doyle models are "demand" oriented, while the WICHE model uses a "needs" approach. "Demand" in the SREB requirement projection is based on 1977 regional and national nurse staffing patterns. "Need" in the WICHE model reflects goals of nurse staffing patterns.

TABLE 8

Projections of Registered Nurse Supply (RN's Available for Employment)

	1972		1977	1985
	Number Employed	Percent of Number Resident in State	Projected Supply	Projected Supply
Alabama	7,847	77%	11,000	17,400
Arkansas	3,776	75	5,700	10,000
Florida	26,202	78	36,600	55,000
Georgia	12,492	72	19,100	37,900
Kentucky	8,487	72	11,900	18,700
Louisiana	9,133	79	12,200	19,900
Maryland	14,847	66	21,300	32,600
Mississippi	5,129	82	7,500	13,000
North Carolina	16,649	78	22,800	35,200
South Carolina	7,916	78	10,700	17,300
Tennessee	9,446	78	13,600	20,600
Texas	28,213	70	40,400	69,000
Virginia	16,647	70	23,200	36,800
West Virginia	6,255	86	8,300	12,200
SREB Region	173,039	73	244,300	395,600

Source: American Nurses' Association, *Facts About Nursing 1976-77*, pp. 6-7, and U.S. Department of Health, Education, and Welfare, Bureau of Health Manpower, *Second Report to the Congress*, 1979, p. II-50.

The conclusion on the basis of the SREB and Doyle requirements data that the region will be amply served with RN's in 1985 by maintaining the current production levels of basic nursing programs does not mean that every state in the region will face a similar outlook. On the contrary, some Southern states may face shortages, relative to others that will be overserved. Moreover, the intrastate distribution of nurses may still produce shortages in some locations while others are amply supplied. The conclusions of the SREB and Doyle requirements versus the supply projections do indicate, however, that policies directed specifically to the distribution problem will be more relevant, regionally, than efforts to further stimulate the overall production of basic RN graduates.

Another problem that deserves careful attention relates to why so many RN's choose not to practice. Indeed, the current woes over nursing shortages, heard primarily from hospital recruiters, would be eliminated with higher RN participation in the labor force. The continuing general trend toward labor force participation by women, regardless of their marital status, may conceivably increase future retention of RN's in the labor force. Higher RN participation rates were found in 1972 than in 1962.[25] Given the failure of 30 percent of

licensed RN's to practice, plus the estimate in one Southern state that those who fail to renew licenses may constitute an additional one-third, it is clear that today's shortages would disappear if these RN's chose to practice. The theoretical economic strategy to achieve more frequent returns to practice rests on the price mechanism: increase the salary level, and more RN's in the current pool will enter the labor market — and more will work full-time, rather than part-time. Yet some past studies cast doubt on the effectiveness of the price strategy. For married nurses, husbands' incomes and child care responsibilities may be more important determinants of work participation rates than salary levels.[26] Nor were financial incentives found to be particularly effective as inducements toward mobility even for single nurses.[27] Other factors may be more important, such as increasing the level of satisfaction that RN's derive from their work.

Frustration of nurses regarding their work may play a role in the low participation rate. When RN's are divorced from direct patient care by layers of administrative work, they become disillusioned. Unfulfilled expectations, both in terms of patient care and responsibility levels, contribute to frustration. Whether unmet expectations are a result of unrealistic training or faulty utilization of RN's by employers is a hotly debated issue beyond the scope of this paper.

If a relationship could be demonstrated between measurable personal characteristics of nursing students and their future likelihood to remain in practice, selection of students with such characteristics might affect future work force participation rates. This strategy merits consideration, since nursing education is costly. In 1974, a Texas study estimated the cost of educating an RN, exclusive of program startup costs, from $3,357 for associate degree nurses in junior colleges to $22,314 for baccalaureate nurses in senior institutions.[28] Direct annual per student operating costs of basic RN programs in 1974 were found to be $1,200 to $2,500 for baccalaureate programs, $1,065 to $1,665 for associate degree programs.[29] Especially in public institutions, where much of this educational cost is tax borne, it would be cost-effective if selection could result in greater work force participation.

In the final analysis, the most frequent reason that RN's do not practice will probably continue to be their family responsibilities. This means that many married nurses will leave the work force for some years, regardless of salary levels or role changes that raise the rewards of practice. It is these RN's, given the proper encouragement, who comprise a large pool from which to draw re-entrants. If they decide to resume practice, they usually need refresher courses available in their own communities. Current emphasis on providing baccalaureate education for RN's with prior associate degree or diploma education may or may not meet the needs of RN's who wish to sharpen their skills to re-enter the labor market.

Until conjectures about increased participation are translated into reality, however, the bottom line in projecting the supply of available RN's will have to rest on the assumption of continued labor force participation at current rates. Past efforts to increase RN entry have not been successful enough to warrant supply projections on any other basis. The 1985 supply projections discussed in this report, 335,000 and 395,600, based on past participation rates, indicate that there will be enough registered nurses. The supply will be sufficient to permit implementation of the 1977 national staffing patterns in the region by 1985 or of extended and new roles for RN's. Even enactment of national health insurance would not strain supply. If, on the other hand, the criteria of nurse staffing patterns developed by the WICHE Panel of Experts are deemed necessary in the region, then the projected supply will not be large enough to fill needs.

What Level Education?

Not only is there the issue of "How many RN's?" but also "What level RN's?" The American Nurses' Association resolved in 1978 that by 1985 the minimum educational level for "professional" RN's should be the baccalaureate degree, while the associate degree would be the requirement for "technical" RN's. The distinctions in competency for these two types of RN's have not yet been drawn. The proposal is controversial and has produced support and opposition within the nursing profession. A recent poll of nursing educators found the group almost evenly divided over the proposal.[30]

The SREB Nursing Curriculum project task group in 1976 considered the appropriate educatonal levels for nurses in various roles and settings. In the model developed by the project, associate degree nurses enter the health care system as staff nurses to care for clients with common, well-defined illnesses, under the supervision of baccalaureate nurses. The latter enter the system as staff nurses in "primary and tertiary care." "Primary care" is defined as "practice directed toward providing services for health maintenance and promotion," as in community health programs. "Tertiary care" is associated with large hospitals, acute illnesses, and problems that are uncommon and moderately complex.[31]

The many requests that higher education planning agencies are currently receiving for establishing baccalaureate nursing programs have come partly as a result of the nursing profession's push for the baccalaureate as the minimum requirement for "professional" nursing. As was shown in Table 1, baccalaureate programs in the region now account for 32 percent of RN graduations. There has been a steady shift away from diploma programs to collegiate ones for basic nursing education. Moreover, in recent years, basic RN graduates at the baccalaureate levels have shown a greater rate of increase (120 percent) than those from the associate degree programs (68 percent) from 1973 to 1977.

The proportion of total programs needed at the baccalaureate level will depend upon the distribution of RN's performing "professional" versus "technical" nursing. In the absence of objective standards of the different competencies required of nurses in various roles and settings, the projections of this distribution depend on subjective criteria. Two sets of such criteria have been developed: one by the WICHE Panel of Experts in 1978, and an earlier one by a Consultant Group to the Surgeon General in 1963.

According to the criteria of the WICHE Panel of Experts, the 1982 national distribution of required RN's, by educational levels, would be as follows:[32]

	Lower Bound	Upper Bound
Associate Degree and Diploma	35.7%	33.7%
Baccalaureate	47.6	47.4
Master's and Doctorate	16.7	18.9

The 1963 criteria of the Surgeon General's Consultant Group are shown in Table 9. The differences between the two sets of criteria center primarily on RN's involved in direct patient care. For example, the WICHE criteria specify that 50 percent of direct patient care RN's in

nursing homes should hold a baccalaureate, while the Consultant Group specifies this level only for directors of nursing services. Similarly, WICHE postulates 50 percent of all direct patient care RN's in general units of short-term hospitals at the baccalaureate level, while the Consultant Group specifies this only for head nurses or team leaders.

According to the 1963 Consultant Group criteria one would expect that hospital standards by now would require at least a baccalaureate for nurse administrators. The American Hospital Association in 1978 considered an accreditation requirement to that effect, but in the end the adopted standards state, "It is desirable, but not required, that the nurse administrator have at least a baccalaureate in nursing."[33]

The Consultant Group criteria were applied to SREB's RN requirement projections derived earlier in this report. (See Appendix 2 for detailed assumptions of how these criteria were applied to SREB's RN requirement projections.) These criteria are applied only to distinguish RN's below the baccalaureate degree as compared to all others (baccalaureate or higher levels combined). The available data do not permit finer distinctions.

The results of applying these criteria are shown in Table 10, and indicate that 34 percent of all RN's in the region will require at least a baccalaureate degree. This proportion is almost half of the 64 to 66 percentage distribution obtained by the WICHE Panel of Experts for their national projections, and below the 40 percent projected for 1980 by the HEW Division of Nursing.[34]

TABLE 9

Surgeon General's Consultant Group
Criteria of Preparation for Registered Nursing Positions

Position and field of employment	*Educational preparation*
Deans of collegiate programs, faculty of graduate programs, research investigators, and nursing service directors of large hospital systems or health agency systems	Doctorate
Teachers in all nursing education programs	Master's
Directors and assistant directors of nursing service in hospitals, related institutions, and health agencies	Master's
Inservice education directors, supervisors, clinical specialists, and consultants in all types of institutions and health agencies or services	Master's
Head nurses, team leaders, public health and school nurses, and occupational health nurses at staff level	Baccalaureate
Directors of nursing service in nursing homes giving "skilled nursing care"	Baccalaureate
Registered nurses in other staff positions, in doctors' offices, or engaged in private duty	Diploma or Associate Degree

Source: U.S. Department of Health, Education, and Welfare, Division of Nursing, *Source Book Nursing Personnel*, p. 214.

TABLE 10

Registered Nurse Requirements at Baccalaureate and Higher Degree Levels, According to Criteria of the Surgeon General's Consultant Group, SREB Region

	1985		1990	
	Regional Staffing Patterns	U.S. Staffing Patterns	Regional Staffing Patterns	U.S. Staffing Patterns
Short-Term Hospitals Administrators and Supervisors	42,024	49,328	45,500	53,411
Federal Hospitals	5,327	5,327	5,327	5,327
Psychiatric, Tuberculosis and Long-Term Hospitals	2,176	2,320	2,906	3,096
Nursing Homes	6,908	8,870	7,659	9,835
Public Health	22,106	25,090	24,634	26,749
Occupational Health	6,920	7,993	7,438	8,602
Schools of Nursing	7,800	7,800	7,800	7,800
Total at Baccalaureate or Higher Degree Level	93,261	106,728	101,264	114,820
Percent of Total Required RN's	34%	33%	34%	33%

In 1977, only 22 percent of all full-time-equivalent RN's in the United States held at least a baccalaureate degree.[35] In public health and school nursing, where the criteria agree that the baccalaureate should be the minimum level of education for RN's, only 42 percent were at least at this level in 1972.[36] There are no current estimates of the distribution of RN's by educational levels in various employment settings.

Reports from some state public health offices indicate that only half of the staff RN's employed by these agencies hold the baccalaureate, an indication that there are not enough at this educational level.

The projected one-third requirement in the region for RN's with at least a baccalaureate degree is tied to the configuration of the present health care system. This implies a continuation of the current distribution between hospital and ambulatory care. To the extent that present patterns might change, utilization of and requirements for RN's at various educational levels could also change. For example, increased geriatric home care (as opposed to nursing homes) would probably require a greater proportion of RN's at the baccalaureate level since nurses in community health work traditionally have had higher educational standards than those in institutional settings.

In the region, the current 32 percent which baccalaureates comprise of annual *basic* nursing graduations will gradually increase the proportion of total RN's at this level. (Associate degree and diploma nurses who return to earn a baccalaureate degree would increase the proportion

above this 32 percent level.) The process, however, will take time. According to the HEW Division of Nursing, the proportion in the region in 1985 will still be only 26 percent.[37] Not until the 1990s will the current one-third proportion of *graduates* at the baccalaureate level produce that same share of *employed* RN's in the region. Greater emphasis now on baccalaureate education in nursing would reduce this time lag. It may also result in eventually overshooting the requirements that the criteria warrant.

Currently the most serious shortage of RN's is found in hospitals. Some hospital administrators are now wondering whether the switch to collegiate nursing programs away from hospital-based schools has contributed to their recruitment problems. The limited available research on recent RN graduates' employment choices indicates that variations in their personal and familial characteristics are more important than the differences in their basic training programs in determining their job decisions.[38]

More research is needed to identify factors which make initial and continued employment in hospitals unattractive (e.g., night shifts, administrative duties, or patient loads) and whether such factors affect RN's equally regardless of the type of basic training program they completed. The three types of RN training programs do differ in RN's they attract. Associate degree programs, for example, attract more older and minority students; diploma programs, more students from rural areas; and baccalaureate programs, more students with higher high school grades.[39] Do these differences relate to the future retention of RN's and to their dispersal to employment settings with the greatest shortages, or will the future marital status of RN's or their husbands' employment location and income override the possible importance of such differences? Future directions on the distribution of training programs across levels and institutions would benefit from further research on these issues.

Policy Perspective

When nurse requirements in the region are projected on the basis of "effective demand," the supply of RN's from the current educational programs should suffice. If, on the other hand, requirements are projected on "needs" criteria, which tend to be subjective, then the region will continue to suffer from nursing deficits.

If the effects of national health insurance on nurse requirements that were estimated nationally are the same for the region, the projected regional supply of RN's should still suffice. On the other hand, if RN utilization patterns change rapidly in response to the profession's initiatives regarding new functions and expanded roles, then the projected regional supply will fall short.

An adequate overall supply of RN's will not solve the distribution problem. Rural areas will continue to have difficulties in attracting enough RN's even if the total regional supply appears to be adequate. The disadvantages associated with nursing in hospitals, such as night shifts, will continue to pose recruitment problems for some hospitals. Cost-effective solutions to these problems will rest on strategies designed directly to meet the causes of the distribution problem, rather than on increasing the total number of RN's.

This means that in the first instance the underlying causes of the distribution problem will have to be identified. What will attract RN's to rural areas, or back into the labor market, or to hospital employment? Are financial incentives needed to promote mobility of RN's, or will marital status or other factors override financial incentives to redistribute RN's? Where are the "delinquent" nurses who fail to renew their licenses or to practice despite current registration? Are any significant numbers living in rural areas and, if so, how effective would various incentives be to bring them back into the work force? Is it a matter of pay, lack of flexibility in working hours, lack of child care, or frustration about the work itself? If these impediments could be overcome, the inactive pool of RN's needs refresher courses — and how available are the opportunities to take such work?

How important are nurses' frustrations over their roles in hospital settings in accounting for turnover and recruitment problems of hospitals? Can major frustrations be identified? Can working conditions be changed to overcome frustrations? Do expectations of nursing roles conflict with reality? Do expectations need to be revised, or can "reality" be changed? Do some individuals have a greater potential of adapting to the vicissitudes of a demanding profession and, if so, do selection programs take these characteristics into account?

A policy that seeks to expand the supply of RN's ad infinitum to overcome the distribution problems may not succeed in doing that, and would certainly be costly. It would be more economical to identify the causes of the distribution problem, and to tailor strategies that address such causes.

As to the issue of the proportion of RN's required at the baccalaureate level, it is important to recognize that the criteria according to which such proportions are estimated were developed subjectively. Thus, a projection that by 1990 the region will meet the criteria of the Surgeon General's Consultant Group regarding levels of education but will fall halfway of the

mark set by the WICHE Panel of Experts is not especially meaningful. Until objective differences in competencies are developed for RN's who work in various settings that relate to corresponding differences in baccalaureate versus associate degree-diploma training programs, the controversy about the appropriate distribution between levels of nursing educational programs will be debated subjectively. When these competencies are defined, it may well be that baccalaureate programs in the region will merit further emphasis. Until that has been done, however, there is no objective reason to move beyond the current regional 32 percent share of basic RN graduates at the baccalaureate level.

Appendix I

Projection Methods, SREB Regional RN Requirements, 1985-1990

RN's in Short-Term Hospitals

(1) Age-specific population projections, Southern region, 1985 and 1990 (National Planning Association).

(2) Average length of stay, South, times average age-specific utilization rates, South *(Utilization of Short-Stay Hospitals, 1976),* times projected population by age, divided by 365 = projected Average Daily Census (ADC) for 1985 and 1990.

(3) Distribute projected ADC to Class 1-6 hospitals according to distribution of 1977 ADC by hospital classes in the region (American Hospital Association) = 1985 and 1990 ADC per hospital class.

(4) FTE RN's per hospital class for the region in 1977 (American Hospital Association) = regional total RN staff.

(5) FTE RN's per hospital class for the U.S. in 1977 (American Hospital Association) = U.S. total RN staff.

(6) Apply 1972 U.S. percentage distribution of hospital RN's by hospital units, by hospital classes (i.e., administration, inpatient supervision, inpatient staff, operating room supervision, operating room staff, etc.) (*Nursing Personnel in Hospitals, 1972*) to (4) and (5) = 6(4), 1977 regional and 6(5), 1977 U.S. RN's, by hospital units and hospital class.

(7) Divide 6(4) and 6(5) by 1977 regional and U.S. ADC's per hospital class = 7(4) regional, and 7(5) U.S. 1977 indices of RN's per ADC's per hospital class and per hospital unit.

(8) Apply 7(4) and 7(5) to projected 1985 and 1990 ADC's = projected regional FTE RN requirements according to 1977 regional and U.S. staffing patterns.

RN's in Other Hospitals

Hospital Units of Other Institutions (e.g., university infirmaries) 1977

(1) Total FTE RN's in region = 362 (American Hospital Association); 1985-1990 projection = 400.

Federal Hospitals

(2) 1977 Total FTE RN's in region = 13,911 (American Hospital Association) 1985-1990 projection = 13,911. Assumption: there will be no change in federal hospitals in the region.

Non-Federal Long-Term Hospitals

(3) 1977 ADC (American Hospital Association) divided by 1977 population in the region times population projections = 1985 and 1990 ADC.

(4) Region's 1977 FTE RN's (American Hospital Association) divided by 1977 region ADC = regional RN staffing rate.

(5) U.S. 1977 FTE RN's (American Hospital Association) divided by 1977 U.S. ADC = U.S. RN staffing rate.

(6) (3) times (4) = projected FTE RN's in long-term hospitals per 1977 regional staffing patterns.

(7) (3) times (5) = projected FTE RN's in long-term hospitals per 1977 U.S. staffing patterns.

Psychiatric and Mental Retardation Hospitals and Tuberculosis Hospitals

(8) Steps (3)-(7) for long-term hospitals were also applied to these types of hospitals.

Nursing Homes

(1) Age-specific residents in nursing homes in the South, 1973-74 (*Utilization of Nursing Homes,* pp. 24 and 31) divided by the South's population in 1973 = regional age-specific utilization rates.

(2) Age-specific residents in nursing homes in the U.S., 1973-74 (*Utilization of Nursing Homes*, p. 24) divided by the U.S. population in 1973 = U.S. age-specific utilization rates.

(3) (1) times 1985-1990 population projections = projected residents in regional nursing homes per regional utilization rates.

(4) (2) times 1985-1990 population projections = projected residents in regional nursing homes per U.S. utilization rates.

(5) 1973-1974 U.S. average of 4.9 FTE RN's per 100 residents of nursing homes (*Utilization of Nursing Homes,* p. 16).

(6) (5) times (3) = FTE projected RN requirements according to regional utilization rates.

(7) (5) times (4) = FTE projected RN requirements according to U.S. utilization rates.

Public Health Nurses

(1) January 1, 1974 Full-time Public Health RN's in Southern States (*First Report to the Congress,* p. 143) divided by 1973 population = 1974 public health full-time RN's per population. Add 20 percent for administrators. It is not clear whether the public health nurse data in the *First Report to the Congress* includes or excludes RN administrators. In the 1972 data on public health RN's (*Source Book on Nursing Personnel,* p. 195) administrative nurses were listed separately and comprised 20 percent and 18 percent of staff nurses for the region and the U.S. respectively. In order to avoid underestimating RN requirements, these same percentages were added for the projections that are based on the 1974 data from the *First Report to the Congress.*

(2) (1) times 1985 and 1990 projected population = projected full-time public health RN requirements per 1974 regional staffing patterns.

(3) January 1, 1974 full-time public health RN's in U.S. (*First Report to the Congress*, p. 143) divided by 1973 population = 1974 public health RN's per population, or national staffing pattern. Add 18 percent for administrators (see above).

(4) (3) times 1985 and 1990 regional projected population = projected full-time public health RN requirements per 1974 U.S. staffing patterns.

Faculty in Schools of Nursing

(1) 1978 regional collegiate nursing schools headcount faculty, plus vacant positions, plus adjustment for non-responding colleges (*Some Statistics on Nursing Education in the South*) = 1978 collegiate nursing faculty requirements.

(2) 1978 diploma nursing school headcount faculty in region, adjusted for non-respondents (National League for Nursing, p. 65) = 1978 diploma school nursing faculty requirements.

(3) 1985-1990 assumption: nursing school faculties will remain at current levels, with a slight 3 percent growth factor included.

Other RN's (*Private Duty, Occupational Health, Physicians' Offices*, and others)

The above categories in the 1972 Inventory of RN's represented 16.3 percent of total employed nurses. (*Source Book Nursing Personnel*, p. 50) The assumption is made that this proportion will remain stable and, therefore, the same proportion is used for the 1985-1990 projected RN requirements as calculated for the separate categories above.

Conversion Ratios

The following ratios were used to convert the above calculated FTE RN's to headcount RN requirements, thereby accounting for nurses employed full-time or part-time.

	Conversion Ratios
Community Hospitals	
Administrative Nurses	1.07*
Inpatient Supervisors	1.05*
Operating Room Supervisors	1.05*
Outpatient Supervisors	1.05*
Inpatient Staff	1.205*
Operating Room Staff	1.097*
Outpatient Staff	1.205*
Other	1.097*
Other Hospitals	
Hospital Units, Other Institutions	1.00
All others	1.052**
Nursing Homes	1.261**
Public Health Nurses	1.061***
Add 13 percent to full-time	
Faculty	Data are given on basis of headcounts
Other	Estimate represents 16 percent of FTE RN's *after* conversion to employed RN's and therefore no additional conversion is required.

*Calculated from full-time to part-time staffing patterns in *Source Book Nursing Personnel*, p. 142.
**Doyle (Vector Research, Inc.) p. 44.
***First Report to the Congress, p. 143.

Appendix 2

Assumptions for Application of Surgeon General's Consultant Group Criteria

For the purpose of this analysis, the criteria shown in Table 9 are applied only for associate degree-diploma RN's versus all other educational levels combined to yield the total percentage of RN's required with baccalaureate or higher degree level.

RN's for Whom At Least a Baccalaureate Degree is Required:	*Projection Methodology*
1. Short-Term Hospitals	
Administrators Inpatient Supervisors Operating Room Supervisors Outpatient Supervisors	Distribution according to the percentage these RN's constitute of total RN's in short-term hospitals in 1977, in the region and in the U.S. (American Hospital Association). This distribution yields one administrative-supervisory RN to every three staff RN's.
2. Federal Hospitals	
Supervisory RN's	a. RN's as a percent of total nursing personnel, general and allied hospitals in 1972 = 33.5 percent (*Source Book Nursing Personnel,* p. 170). b. Percent supervisory nursing personnel of nursing personnel-federal hospital, 1972 = 12 percent (*Source Book Nursing Personnel,* p. 124). c. 12 percent/33 percent = 36.4 percent of all RN's in federal hospitals as supervisory.
3. Other hospitals (long term, psychiatric and mental retardation, and TB)	
Supervisory RN's	1/3 of all RN's in these institutions, on the assumption that the ratio of supervisory RN's in these hospitals will be similar to that of short-term hospitals.

4. Nursing Homes	
Supervisory RN's	**1/3 of all RN's in these institutions, on the assumption that the ratio of supervisory RN's in these hospitals will be similar to that of short-term hospitals.**
5. Public Health	
All RN's	**All RN's in public health, including school nursing, per criteria.**
6. Occupational Health	
All RN's	**All RN's in occupational nursing, per criteria, Occupational Health RN's in 1972 constituted 2.5 percent of all employed RN's (*Source Book Nursing Personnel,* p. 50). This same proportion was used to project occupational health RN's in 1985 and 1990.**

Appendix 3

Regional Registered Nurse Requirements
(Full-Time-Equivalent)

	1977	SREB Projection 1985		1990		WICHE Projection 1982	
		Regional Staffing Patterns	U.S. Staffing Patterns	Regional Staffing Patterns	U.S. Staffing Patterns	Lower Bound	Upper Bound
Community Hospitals							
Administration	–	8,715	10,285	9,435	11,136		
Inpatient Supervisors	–	25,760	30,208	27,892	32,705		
Operating Room Supervisors	–	3,333	3,931	3,610	4,257		
Outpatient Supervisors	–	2,049	2,359	2,216	2,557		
Inpatient Staff	–	74,279	86,120	80,442	93,243		
Operating Room Staff	–	7,648	8,915	8,280	9,653		
Outpatient Staff	–	4,980	5,700	5,390	6,172		
Other	–	11,966	13,857	12,954	15,005		
Total	126,633	138,730	161,375	150,219	174,728		
Other Hospitals							
Federal Hospitals	13,911	13,911	13,911	13,911	13,911		
Hospital Units, Other Institutions	362	400	400	400	400		
Long-Term	1,040	1,177	1,304	1,255	1,391		
Tuberculosis	265	300	347	320	368		
Psychiatric	4,110	4,650	6,504	4,957	6,934		
Mental Retardation	125	141	217	151	232		
Nursing Homes	N.A.	16,701	21,316	18,406	23,635		
Public Health Full-Time Staff	10,583*	18,146	20,040	19,347	21,365		
Administration	2,074*	3,851	3,827	4,106	4,080		
Schools of Nursing	7,100**	7,300	7,300	7,300	7,300		
Other Settings	N.A.	39,087	45,055	41,976	48,446		
Total	–	244,294	281,596	262,348	302,790	340,293	469,927

*1972
**1978 Estimate.

Footnotes

[1]"Nursing Shortage? Yes!" *American Journal of Nursing,* March 1979, p. 469.

[2]Western Interstate Commission for Higher Education, Panel of Expert Consultants, *Analysis and Planning for Improved Distribution of Nursing Personnel and Services, Final Report,* Boulder, Colorado, June 1978, p. 66.

[3]Patricia T. Haase, *A Proposed System for Nursing, Theoretical Framework, Part 2,* Southern Regional Education Board, Atlanta, Georgia, 1976.

[4]Timothy C. Doyle (Vector Research, Inc.), *The Impact of Health System Changes on the Nation's Requirements for Registered Nurses in 1985,* U.S. Department of Health, Education, and Welfare, Division of Nursing, Hyattsville, Maryland, 1978, p. 48.

[5]*Ibid.,* p. 55.

[6]*Ibid.,* p. 20.

[7]*Ibid.,* p. 61.

[8]National Commission for Manpower Policy, *Employment Impacts of Health Policy Development,* Special Report No. 11, October 1976, Washington, D.C., p. 16.

[9]U.S. Department of Commerce, Bureau of the Census, *Statistical Abstract,* U.S. Government Printing Office, Washington, D.C., 1978, p. 100.

[10]Western Interstate Commission for Higher Education, *op cit,* p. 28.

[11]Western Interstate Commission for Higher Education, *op. cit.,* pp. 111-134.

[12]Tom Bergan (Pugh-Roberts Associates, Inc.), *A National Model of Supply, Demand and Distribution, Final Report,* Western Interstate Commission for Higher Education, Boulder, Colorado, 1976. The assumptions of the Pugh-Roberts model on requirements for RN's were developed by a Task Group that is independent of the Panel of Experts of the later WICHE model.

[13]Timothy C. Doyle (Victor Research, Inc.), *op. cit.*

[14]Western Interstate Commission for Higher Education, *op. cit.,* pp. 112 and 124.

[15]U.S. Department of Health, Education, and Welfare, Health Resources Administration, *Utilization of Nursing Homes, 1973-74,* Hyattsville, Maryland, 1977, p. 33.

[16]Congressional Budget Office, Congress of the United States, *Nursing Education and Training: Alternative Federal Approaches,* U.S. Government Printing Office, Washington, D.C., 1978, p. 30. The Congressional Budget Office conclusions are based on earlier Division of Nursing supply projections of 1,511,000 to 1,532,000 RN's in 1990.

[17]*Ibid.,* p. 33.

[18]Some of these "delinquents," however, may have been deceased, or active in other states. University of North Carolina General Administration, *Nursing Education in North Carolina 1975-1980,* Chapel Hill, North Carolina, 1975, p. 56.

[19]American Nurses' Association, *Facts About Nursing 1976-77,* Kansas City, Missouri, 1977, p. 7.

[20]Western Interstate Commission for Higher Education, *op. cit.,* p. 70.

[21]State Council on Higher Education for Virginia, *Health Manpower Study: Registered Nurses,* Richmond, Virginia, December 1976.

[22]University of North Carolina, *op. cit.,* p. 56.

[23]American Nurses' Association, *op. cit.,* p. 16.

[24]U.S. Department of Health, Education, and Welfare, Division of Nursing, *Source Book Nursing Personnel,* U.S. Government Printing Office, Washington, D.C., 1974, p. 216.

[25]D. C. Jones, *Trends in Registered Nurse Supply,* U.S. Department of Health, Education, and Welfare, Division of Nursing, U.S. Government Printing Office, Washington, D.C., 1976, p. 20.

[26]*Ibid.,* p. 34.

[27]Frank A. Sloan, *The Geographic Distribution of Nurses and Public Policy,* U.S. Government Printing Office, Washington, D.C., 1975, p. 146.

[28]Coordinating Board, Texas College and University System, *Allied Health Project: Final Report of the Advisory Committee on Cost Analysis,* Austin, Texas, 1974, pp. 13-16.

[29]U.S. Department of Health, Education, and Welfare, *Costs of Education in the Health Professions: Report of a Study, Parts I & II,* Washington, D.C., National Academy of Sciences, 1974.

[30]*Health Planning & Manpower Report,* Capitol Publications, Vol. 8, No. 5 (February 28, 1979), p. 5.

[31]Patricia T. Haase, *op. cit.,* pp. 56-57.

[32]Western Interstate Commission for Higher Education, *op. cit.,* pp. 122 and 134.

[33]Joint Commission on Accreditation of Hospitals, *Accreditation Manual for Hospitals, 1980 Edition,* Nursing Services (Standard adopted 12/78).

[34]U.S. Department of Health, Education, and Welfare, Division of Nursing, *Source Book Nursing Personnel,* Washington, D.C., U.S. Government Printing Office, 1974, p. 63.

[35]U.S. Department of Health, Education, and Welfare, Bureau of Health Manpower, *Second Report to the Congress,* U.S. Government Printing Office, Washington, D.C., 1979, p. 52.

[36]U.S. Department of Health, Education, and Welfare, Division of Nursing, *Source Book Nursing Personnel,* p. 72.

[37]U.S. Department of Health, Education, and Welfare, Bureau of Health Manpower, *Second Report to Congress,* p. II-52.

[38]Frank Sloan, *Equalizing Access to Nursing Services: The Geographic Dimension,* U.S. Government Printing Office, Washington, D.C., 1978, p. 133. (The Knopf study, however, did find 20 percent fewer of the baccalaureate RN's employed in hospitals five months after

graduation than was true for RN's with other types of basic training. Lucille Knopf, *RN's One and Five Years After Graduation,* National League for Nursing, New York, 1975, p. 18.)

[39]Lucille Knopf, *From Student to RN,* U.S. Government Printing Office, Washington, D.C., 1972, pp. 45-71.

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[1]American Hospital Association, *Hospital Statistics, 1978 Edition,* Chicago, Illinois, 1978.

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[5]T. B. Sivia, et al., *Regional Economic Projections, State and Metropolitan Growth Patterns, 1960-1990,* National Planning Association, Washington, D.C., 1977.

[6]U.S. Department of Health, Education, and Welfare, Public Health Service, *Utilization of Short-Stay Hospitals: Annual Summary for the United States, 1976,* Hyattsville, Maryland, June 1978, pp. 31 & 33.

[7]_____ *Nursing Personnel in Hospitals—1972 Survey of Hospitals Registered with the American Hospital Association,* Washington, D.C., December 1974.

[8]_____ Health Resources Administration, *First Report to the Congress,* Nurse Training Act of 1975, Hyattsville, Maryland, February 1, 1977.

[9]_____ Health Resources Administration, *Source Book Nursing Personnel,* Bethesda, Maryland, December 1974.